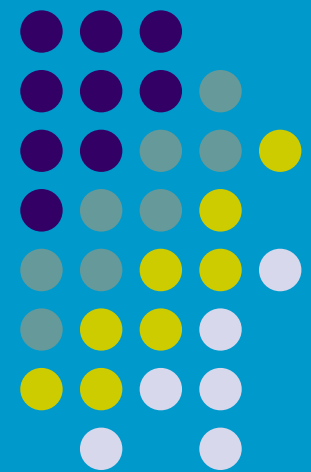


# Development of Biofuels in China and Related Policies and Measures

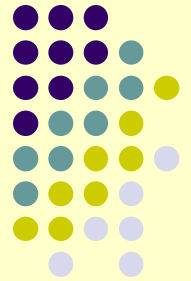
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Mr. Xiong Bilin  
People's Republic of China  
Aug 21, 2007

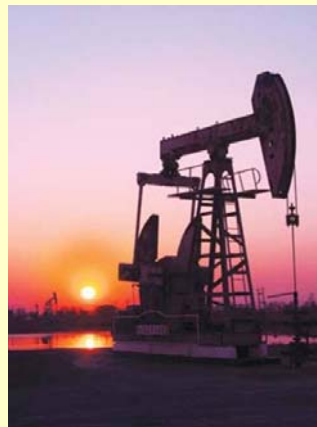


# Introduction

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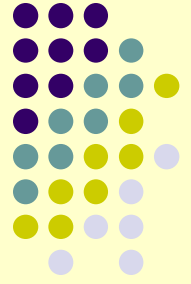


Sufficient, safe and clean energy supply is a fundamental guarantee of social and economic development. Entering the 21st Century, substantial increase of energy consumption, depleting oil resources and deteriorating environment have posed severe threat to the sustainable development of human society. How to address above issues has become a major strategic problem concerned by the international society.

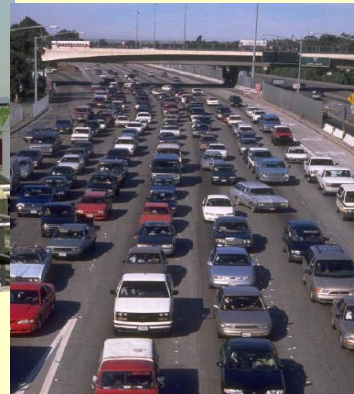


# Introduction

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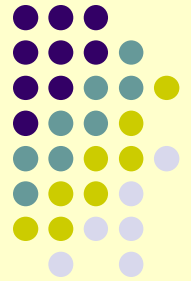



Development and use of renewable energy represented by biofuels has become a strategic choice and development path of many countries. Currently, liquid bio energy mainly includes biological fuel ethanol and bio-diesel.



# Introduction


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 Fuel ethanol is internationally recognized as a clean renewable fuel, which can replace MTBE that causes underground water pollution, reduce greenhouse gas emission, and is a priority of the global renewable energy development.

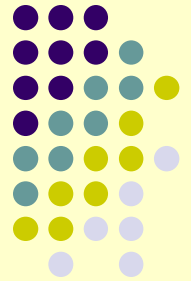
Year 2000  **Global** 13.9 million tons

Year 2006  **US**  **Brazil**  **China** 40.50 million tons

 In 2000, the global fuel ethanol output totaled 13.9 million tons. In 2006, the output increased to 40.5 million tons, of which the US produced 16.4 mt, Brazil 13.5 mt and China 1.54 mt.

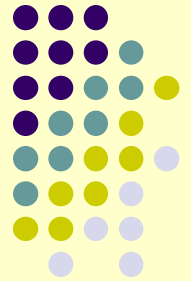
# Introduction

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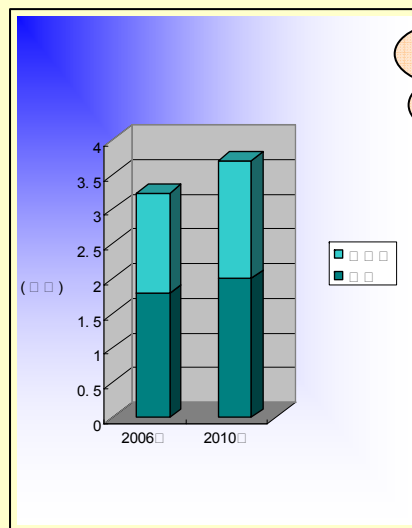


- ❖ bio-diesel is an important component of bio energy, which can replace current petroleum diesel, or can be mixed with petroleum diesel as an additive, and has attracted attention of international community.
- ❖ EU, US, China, Canada, South Korea, Brazil, Japan, Thailand, India and Malaysia choose to produce bio-diesel from different feedstock according to their specific situation. Major feedstock include rapeseed, soybean, palm oil, small tung tree, and waste grease. The governments support the industry with favorable tax policies and financial subsidies.

## Development of Biofuels in China and Related Policies and Measures



China's energy mix is characterized as rich in coal, and lack of oil and gas. What lacks most is oil. In 2006, China's oil consumption totaled 323 million tons, among which 145 millions are imported. It is expected that by 2010, China's oil consumption will reach 370 million tons, and only 200 million tons are domestically produced, which indicates that China's oil dependency is relative high.

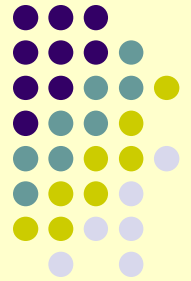


### Oil Demand Forecast

Finding oil replacement is one of the most urgent task to address current energy challenge.

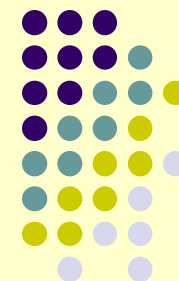
## **Development of Biofuels in China and Related Policies and Measures**

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As alternative energy, biofuels have received great attention from the Chinese government. In the “10th Five-Year Plan” period, in order to properly handle overstocked stale grain to stabilize agricultural production, as well as to explore alternative energy, reduce tail gas pollution and improve air quality, several pilot projects on promoting the use of motor gasohol were carried out in certain regions, which have laid a basis for the development of China’s biofuels industry.

## Development of Biofuels in China and Related Policies and Measures



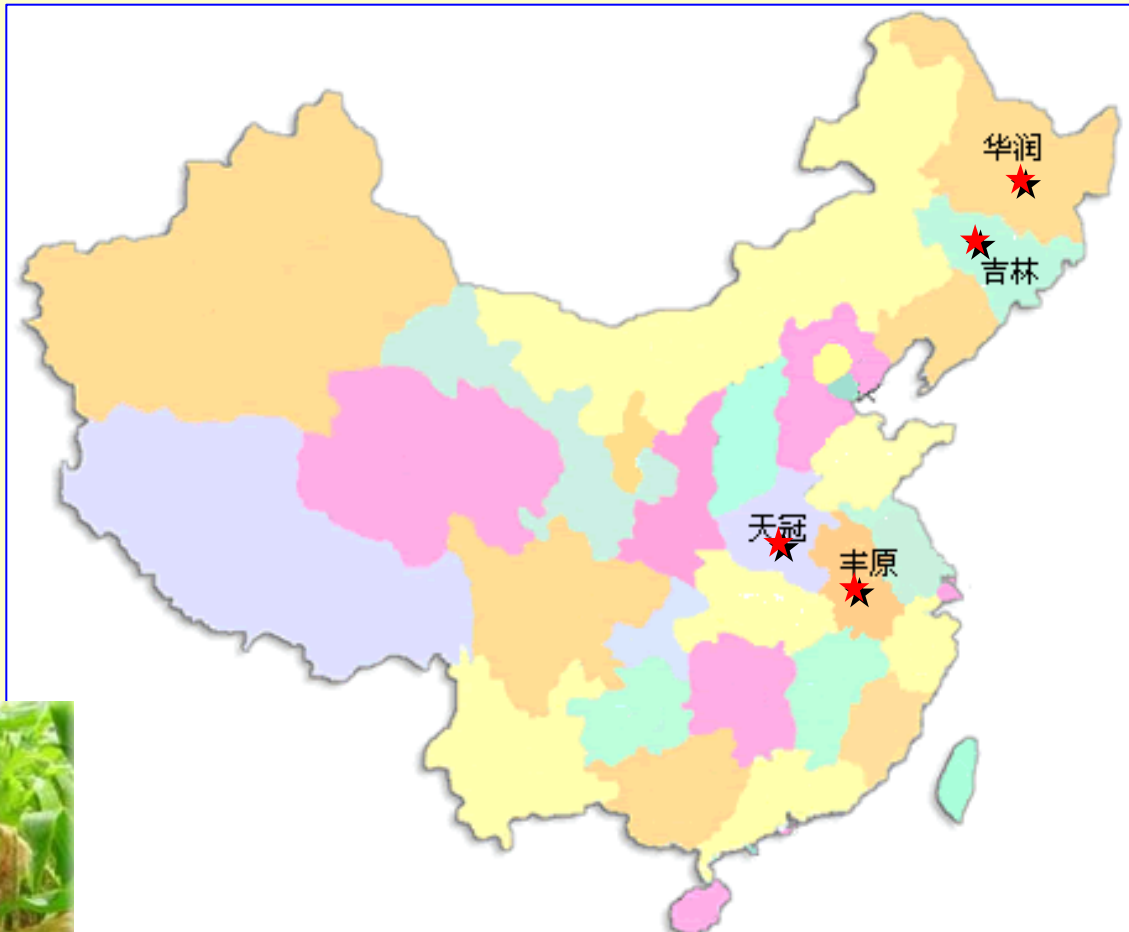
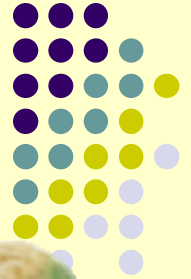
### Production Pilot Projects

During the "10th Five-Year Plan" period, 4 fuel ethanol production pilot projects were implemented, which use grain as major feedstock and have developed an annual production capacity of 1.02 million tons.

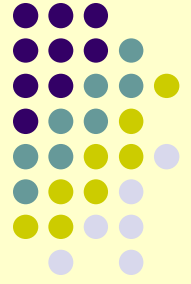
	Production Capacity 10 thousand tons/y	Feedstock	Time of Operation
Jilin Fuel Ethanol Co., Ltd.	30	Corn	2003.09
Henan Tianguan Group	30	Wheat, Corn and Sweet Potato	2005.03
Anhui Fengyuan BioChemicals Co., Ltd.	32	Corn	2005.11
Heilongjiang Huarun Ethanol Co., Ltd.	10	Corn	2001.04



# Development of Biofuels in China and Related Policies and Measures



## Development of Biofuels in China and Related Policies and Measures

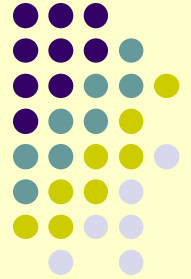


### Jilin Fuel Ethanol Co., Ltd. 300 thousand tons/y



# Development of Biofuels in China and Related Policies and Measures

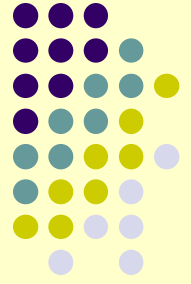
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**Henan Tianguan Group**  
**300 thousand tons/y**



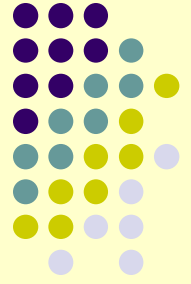
## Development of Biofuels in China and Related Policies and Measures



**Anhui Fengyuan BioChemicals Co., Ltd.  
320 thousand tons/y**



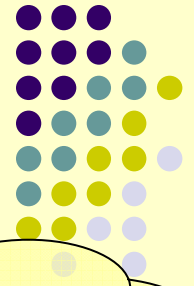
# Development of Biofuels in China and Related Policies and Measures



**Heilongjiang Huarun Ethanol Co., Ltd.**  
100 thousand tons/y



# Development of Biofuels in China and Related Policies and Measures



PetroChina and Sinopec's  
Mix and Distribution  
Center and Gas Stationz

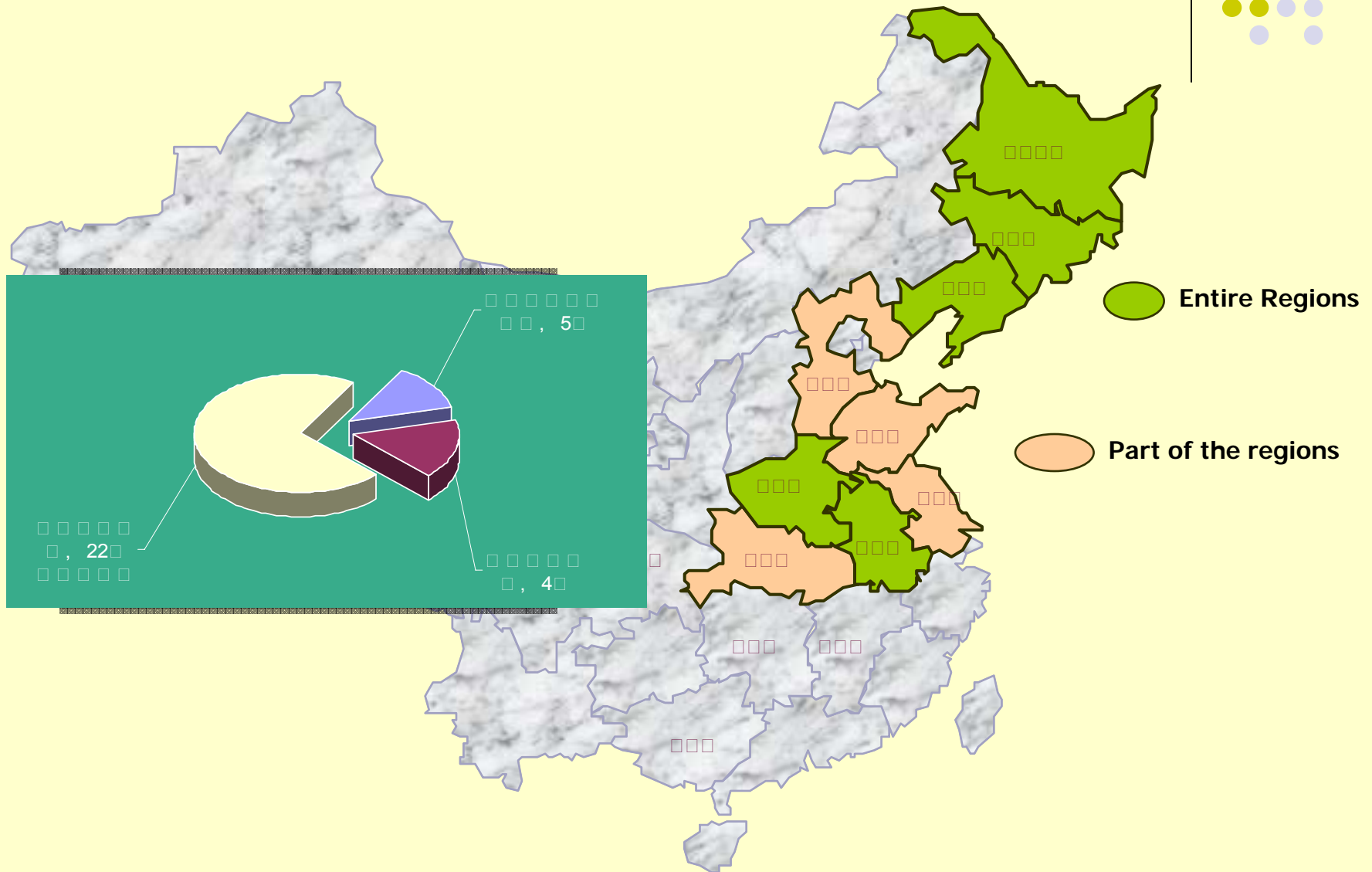
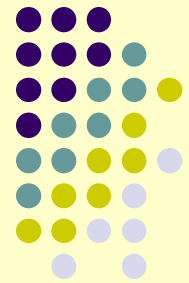


Annual gasoline mixing and  
of 10.20 million tons

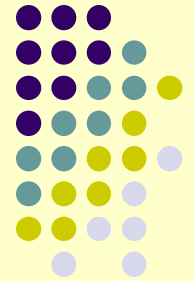


and in 27 cities in 4 p

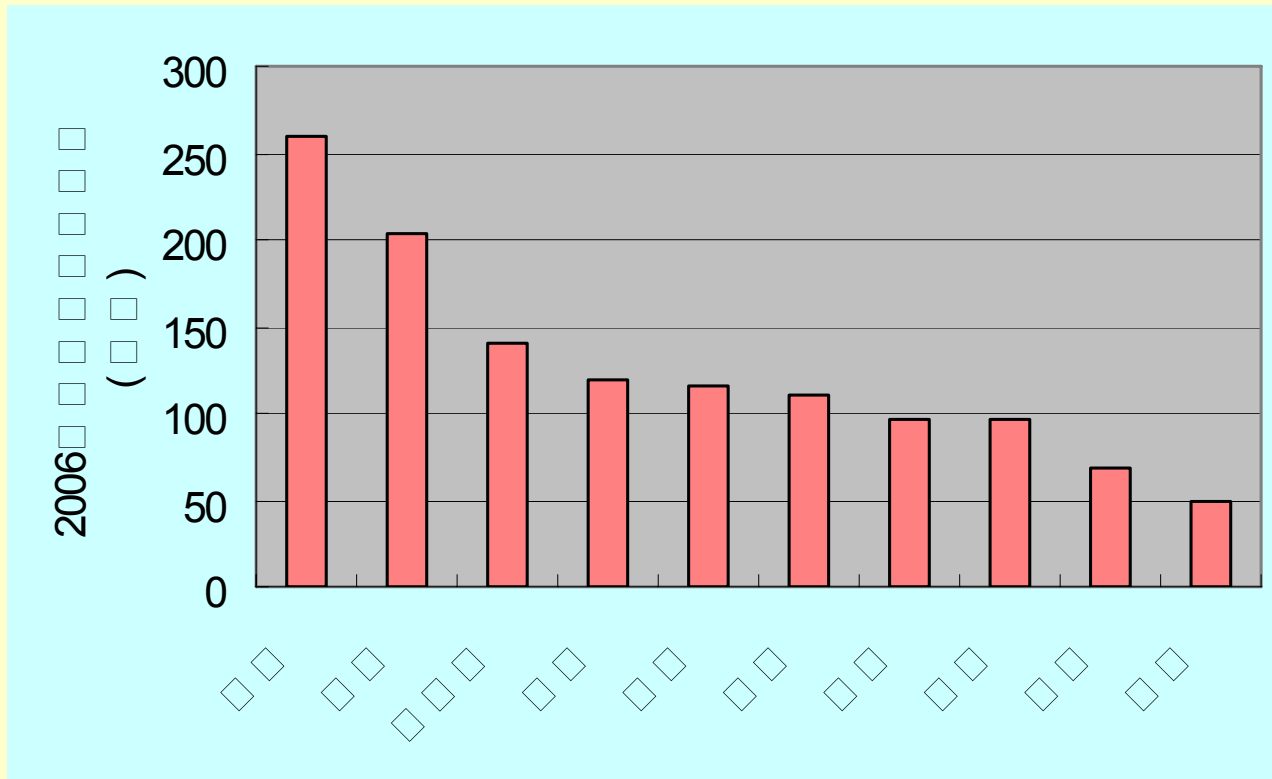
# Development of Biofuels in China and Related Policies and Measures



# Development of Biofuels in China and Related Policies and Measures



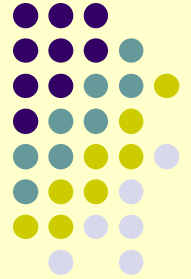
**Distribution Capacity 10.20 mt**  
**Sales of gasohol in 2006 15.44 mt**





## **Development of Biofuels in China and Related Policies and Measures**

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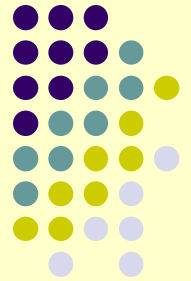
### **Policy Support**

**I. Provide favorable consumption tax and value-added tax policies for fuel ethanol production as well as distribution and sale of gasohol.**

**II. Develop pricing mechanism. According to the principle of same quality, same price, the market retail price of gasohol which shares same code with common gasoline is priced equally, and will adjust accordingly along with the common gasoline.**

## **Development of Biofuels in China and Related Policies and Measures**

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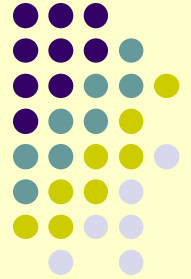


### **Implication of the success of pilot projects**

- Promotion of gasohol in China is applicable in terms of technology**
- Profitable in current policy environment**
- The three strategies specified at the beginning of the pilot projects, i.e. to stimulate agriculture, protect environment and develop alternative energy have been proven to be effective and has brought remarkable social benefits**

## **Development of Biofuels in China and Related Policies and Measures**

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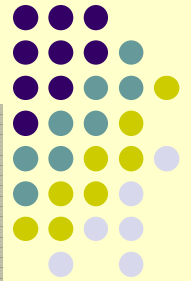


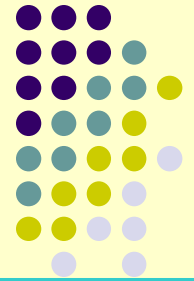
**As one of the ten key projects of the National Tenth Five-year Plan, China's bio-energy industry, which are represented by fuel ethanol has made periodical progress. It only took 5 years for China to become the third largest country of fuel ethanol production and consumption after USA and Brazil.**



At the preparation meeting of “the World fuel ethanol Forum”, China put forward that biomass industry should become a new industry which will be advanced by the joint efforts of the world.

- The preparation meeting of “the World fuel ethanol Forum” was held at Brasilia on September 5th, 2006, which was initiated by the president of Brazil, Lula and participated by China, Brazil, India, South Africa, USA and EU.
- It was agreed to develop an international trade market for fuel ethanol, in order to accelerate the biofuels industry, to make up for the shortage of petroleum and to drive the development of world economy.





❁ The International Conference on biofuels which was sponsored by EU, was held in Brussels, Belgian on July 5th, 2007.

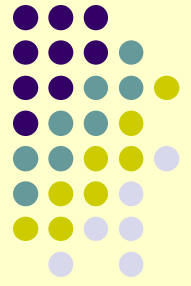
❁ The conference aimed to enhance the international cooperation between EU and main energy partners on biofuels. Participants exchanged information about the present situation, supporting policy, international trade, positive and negative aspects of large scale usage, technical line and development trend of biofuels in detail.



❁ We put forward at the conference that

**every country should give serious consideration on the food security issue during the development of biofuels industry!**

# Development of Biofuels in China and Related Policies and Measures



## Policy Orientation

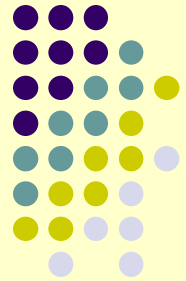
Based on the fundamental national conditions that China has a large population with insufficient arable land, and its population is growing with arable land shrinking, China's overall guideline for fuel ethanol development is that, we must adhere to the People-Oriented principle, conservation of environment and ecology, harmonious utilization and sustainable development.

Meanwhile, we must ensure that fuel ethanol development must not:

- compete for arable land with grain,
- use grain as major feedstock,
- destroy ecological environment.

The feedstock supply chain must be designed in a scientific way. We will actively develop alternative non-grain feedstock such as cassava, sweet potato, sweet sorghum and even stalks, which will not threaten the food security nor occupy the land that could cultivate grain. Especially for the existing fuel-ethanol producers, they are encouraged to increase the proportion of non-grain feedstock so as to enhance diversification of feedstock and flexibility of production.

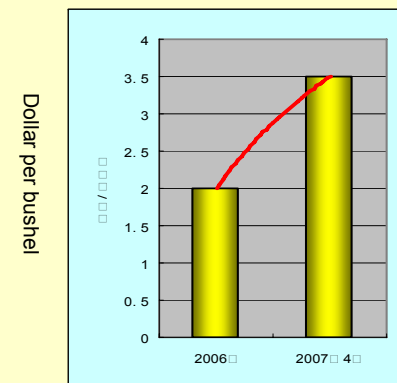
## Development of Biofuels in China and Related Policies and Measures



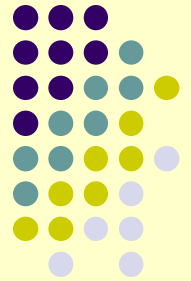
With the fast expansion of fuel ethanol production around the world, food security has gained more and more attention. Especially last year, the price of grain soared, such as corn, which led to the price hike of meat. Grain ethanol has put pressure on the price stability of many countries especially the ones with underdeveloped economy. The price of agriculture products in China also soared in recent years. The development of the industry is facing crucial challenges.

- Strictly control the production of fuel-ethanol from grain,
- Choose regions with good condition and abundant non-grain resources to carry out pilot project on non-grain fuel ethanol,
- Provide financial policy supports.

**Corn → meat, eggs, grain and oil by-products**



# Development of Biofuels in China and Related Policies and Measures



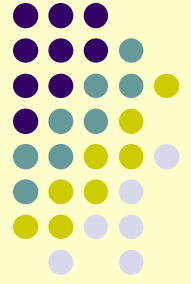
## About Bio-diesel

China is a major diesel consumer with a consumption of more than 100 million tons last year. Bio-diesel is on its early development stage in China. Based on the fundamental national conditions of a large population with insufficient arable land, the development direction of bio-diesel is that, on the premise that it does not compete with grain plantation for land nor compete with people for food oil, we will actively develop other feedstock such as woody oil plants , including Barbadosnut (*Jatropha curcas*), Chinese pistache (*Pistacia Chinensis*), Chinese Tallowtree (*Sapium sebiferum*), etc.





## Development of Biofuels in China and Related Policies and Measures



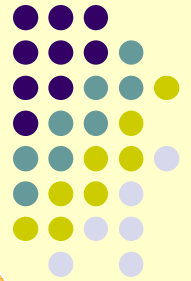
### About Bio-diesel

The resource of Barbadosnut is abundant at Southwestern China (such as Sichuan, Yunnan, Guizhou, etc.) with potential for planting in large scale and good economic, social and ecological benefits, and can be a favorable feedstock for bio-diesel. At present, local governments and relative enterprises are promoting the development of bio-diesel industry in the above region.



# **Development of Biofuels in China and Related Policies and Measures**

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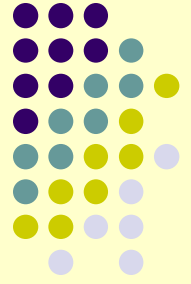


## **Basic guiding principles for developing biofuels in China**

**I. Development of alternative energy in China should achieve wide-range energy-efficient substitution as well as diversified substitution**

**The development of biofuels as an important alternative energy for oil fuel, should take the following factors into consideration: resources endowment, technology level, energy efficiency in full life cycle, environment influence, production cost etc. Improve industry economy through extended industrial chain, high added value, full use and comprehensive utilization.**

# Development of Biofuels in China and Related Policies and Measures



- ❖ extend industrial chain
- ❖ increase added value
- ❖ full use
- ❖ comprehensive utilization



**CO<sub>2</sub> to produce  
degradable plastics**



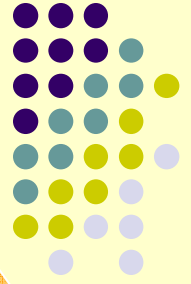
**Biogas Production**



**Feed Production**

# Development of Biofuels in China and Related Policies and Measures

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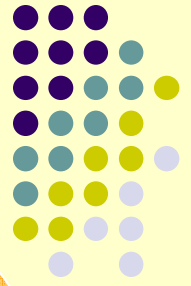
## Basic guiding principles for developing biofuels in China

### **II. Development of biofuels must not threaten food security.**

**As the fundamental food source, grain is the important guarantee for every country's economic and social harmonious and sustainable development, and must be supplied in a regularly and stable way. Bio-diesel industry development must be at the premise of food security and social stability with a feedstock supply system that can guarantee sustainable development of economy and society.**

## **Development of Biofuels in China and Related Policies and Measures**

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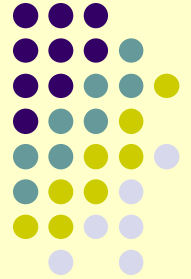


### **Basic guiding principles for developing biofuels in China**

#### **III. Development of biofuels must take the path of non-grain feedstock**

**Properly develop and utilize the saline-alkali land and wasteland that are suitable for growth of non-grain plant, adopt new technology and specialized planting pattern, construct planting base of cassava, sweet potato and sweet sorghum, develop specific, high yield, high starch (sugar) content grain varieties, improving per unit area yield, and create favorable condition for the feedstock diversification of fuel-ethanol.**

# Development of Biofuels in China and Related Policies and Measures

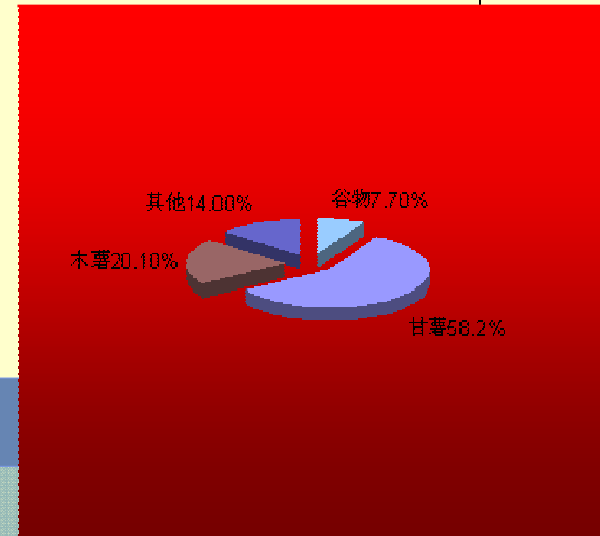


## Direction for feedstock development

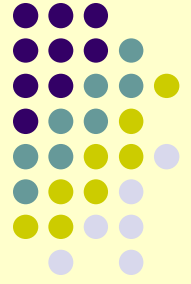
- **consideration of local condition and focus on non-grain feedstock**

## Structure of feedstock

- ◆ Sweet potato and cassava as major source
- ◆ Sweet sorghum as a new source of feedstock
- ◆ Research on cellulosic ethanol and achieve commercialization
- ◆ grain (such as corn) as a complementary source



# Development of Biofuels in China and Related Policies and Measures



## Diversification of feedstock

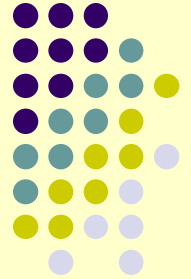


sweet  
sorghum



Cassava

# Development of Biofuels in China and Related Policies and Measures



## Diversification of feedstock

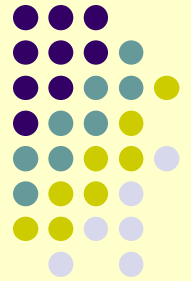
sweet  
potato



Jerusalem Artichoke  
(*Helianthus tuberosus*)



## Development of Biofuels in China and Related Policies and Measures

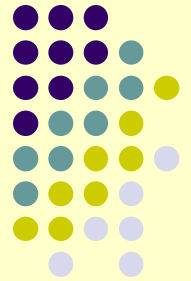


### Cellulosic Ethanol

In the long term, plant cellulose is promising to be a strategic source for ethanol production. The research on cellulosic ethanol has achieved initial success in China, which is close to the international level. Accelerating cellulosic ethanol development is significant to completely address energy and environment restriction, promote development and prosperity of the rural economy and achieve sustainable development of economy and society.



## Development of Biofuels in China and Related Policies and Measures



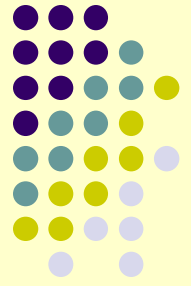
### ★ Starting non-grain fuel ethanol pilot project

Recently, China has approved the first non-grain fuel ethanol project at Guangxi sponsored by COFCO, which use the local abundant cassava resource as feedstock and will produce 200,000 tons of fuel ethanol per year at southwestern China when in operation.



# Development of Biofuels in China and Related Policies and Measures

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## Two Suggestions



**Further strengthen international exchanges and cooperation in biofuels development**



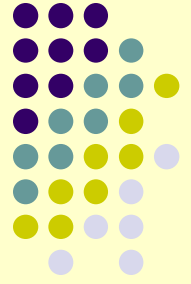
Make full use of all the favorable conditions provided by economic globalization and regional cooperation, enhance technology exchange and communication, explore different ways of collaboration, try to achieve mutual benefit, cooperation and all-win, to better promote the development of alternative energy industry.



**Explore and practice the development path of biofuels industry according to respect local situation**



The secured supply and economy of biomass feedstock are the keys to the steady development of biofuels industry, especially the biofuels-ethanol industry that uses starch as the feedstock, whose industrial correlation effect is significant and is likely to have strong impact on grain production and its processing industries. So, every country should give enough attention to the food security during the industrial development.



**Thanks !**

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